

Pain is a universal phenomenon, experienced by humankind since the beginning of time. It is an extremely complex entity, varying in incidence, prevalence, scope, nature, and clinical significance. Scientists, clinicians, philosophers, writers, clergy, and many others have long sought a better understanding of the phenomenon of pain. The scientific literature reveals much about pain, and yet major gaps in knowledge still exist. When these gaps are viewed from the perspective of nursing and other health-related disciplines, they have significance for future research and the science underlying the care of individuals with pain. This chapter provides a foundation for the content of the report with sections on definitions of pain, prevalence of pain, costs of pain, ethical considerations, and contributions of nurses to development of the science of pain.

### Definitions of Pain

Until recently, clinicians and researchers disagreed about the definition of pain. Livingston (1943) noted that "The chief difficulty encountered in a search for a satisfactory definition of pain is the fact that it can be considered from either a physiologic or psychologic approach. Any consideration of pain, by one approach alone, without due regard to the other, is incomplete" (p. 62).

Various definitions have been proposed over the years. Sternbach (1978) defined pain as "(1) a personal, private sensation of hurt; (2) a harmful stimulus which signals current or impending tissue damage; (3) a pattern of responses which operates to protect the organism from harm" (p. 12). Melzack and Casey (1968) emphasized that not only was pain a sensory experience, but that it had "motivational and affective properties" as well (p. 423). Merskey and Spear (1967) described pain as an unpleasant experience primarily associated with tissue damage, described in such terms, or both. McCaffery's (1968) well-known definition of pain, first proposed for use in clinical practice more than 20 years ago, stated that "Pain is whatever the experiencing person says it is, existing whenever the experiencing person says it does" (p. 95). This perspective highlights the subjective nature of pain.

In an effort to dispel difficulties with the use of varied definitions of pain, the International Association for the Study of Pain (IASP) formulated a definition acceptable to both clinicians and researchers, confirming the view of pain as both a physiologic and a psychologic phenomenon.

This definition paved the way for an increased understanding of pain phenomena through its tacit acknowledgement of multiple components of pain (physical, psychological) and the possibility of pain in the absence of organic pathology. Because it was originally formulated by both researchers and clinicians, the definition has applicability in both arenas.

Subsequent to the publication of this definition, some experts elaborated on the complexity of the pain experience. For example, Melzack and Wall (1982) commented that "Pain is such a common experience that we rarely pause to define it in ordinary conversation. Yet no one who has worked on the problem has ever been able to give it a definition which is satisfactory to all of his colleagues" (p. 9). They viewed pain as representing a "...category of experiences, signifying a multitude of different, unique experiences having different causes, and characterized by different qualities varying along a number of sensory and affective dimensions" (p. 71).

The subjective nature of pain with its inherent variability across individuals has been highlighted by many experts over the years (Beecher, 1959; Lasagna, 1960; McCaffery, 1968; McCaffery & Beebe, 1989; Melzack & Wall, 1982; Merskey & Spear, 1967; Sternbach, 1978). Recent guidelines and position papers also emphasize the importance of the subjective aspects of pain in its assessment and management (Acute Pain Management Guideline Panel, 1992; Spross, McGuire, & Schmitt, 1991).

In 1979, the IASP also provided definitions of specific terms intended to provide a "minimum standard vocabulary for members of different disciplines who work in the field of pain" (p. 249). Some of these terms encompassed specific pain syndromes while others addressed concepts related to pain perception. Definitions relevant to this report are shown in the inset box.

IASP's publication in 1979 led to the subsequent development of a taxonomy for chronic pain and additional definitions (IASP, 1986). The taxonomy also includes a few types of acute pain. Both this extensive classification system and the definitions foster acceptance and use of standard terminology, thus enhancing communication among individuals in different disciplines who study or care for persons with pain. The development of a classification system also provides a means for categorizing pain syndromes and individuals, so that one individual's experience and observations can be compared with those of others (Brose, Cherry, Plummer, & Shea, 1991). This benefit is important to clinicians who use the taxonomy for diagnostic and therapeutic purposes, and to researchers in their studies of pain. Preliminary work has indicated that the taxonomy is generally reliable and has clinical utility (Brose et al., 1991; Turk & Rudy, 1987).

The two major types of pain are acute and chronic. Acute pain has a recent onset and usually signals injury, is of brief duration, subsides as healing occurs, may be associated with hyperactivity of the autonomic nervous system, and is often accompanied by anxiety (Fields, 1987; McCaffery & Beebe, 1989). This type of pain generally accompanies acute injury, disease, or surgery (Weir & Crook, 1992). Encompassed within acute pain is the notion of episodic pain, which is acute pain that recurs at various points in time. These episodes may recur over one's lifetime or for a prolonged period. Episodic pain may be extremely intense in nature and have an unpredictable ending; for example, the pain caused by sickle cell crisis or migraine headaches.

Chronic pain as defined by the IASP (1986) persists past the normal time of healing. The time frame may range from one month to more than six months, but the definition cited three months as the "most convenient point of division between acute and chronic pain" (IASP, 1986, p. S5). Some pain may be viewed as chronic, but associated with medical conditions such as arthritis or some types of cancer in which persistent tissue damage occurs. In contrast, other chronic pain syndromes such as low back pain or headache may occur in the absence of demonstrable tissue damage. Chronic pain can be accompanied by adaptation of the autonomic nervous system, and often is associated with such symptoms as depression, sleep disturbance, constipation, and changes in appetite. In this report, the IASP's definition of chronic pain, three months or longer, is used. It is important to note, however, that chronicity may depend on the nature of the original injury or pathology; thus, flexibility is needed in the definition of "chronic."

In this report, acute pain, including episodic pain, is the major focus. Attention also is given to pain that accompanies certain medical conditions that have both acute and chronic characteristics. Examples include pain occurring in persons with cancer or arthritis. The IASP definitions given above are used throughout to provide consistency across the different types of pain discussed.

## Prevalence of Pain

Pain is a prevalent health problem (Table 1.1.) A community survey conservatively estimated that 16% of the adult (>18 years) population experienced pain (Crook, Rideout, & Brown, 1984.) Age analyses suggested that the pain rate especially for persistent pain (i.e., troubling pain over the last two weeks) was significantly higher in the elderly population (Crook et al., 1984). According to Harkins, Kwentus, and Price (1984), pain is a constant companion for many elderly people. Prevalence estimates for children under 18 years in the general population have not been identified. Community populations suffering from chronic malignant conditions (e.g., cancer) and chronic nonmalignant conditions (e.g., sickle cell disease, osteoarthritis, migraine headaches, and Crohn's disease) have higher rates of pain.

The prevalence of pain in the United States is further explicated in *The Nuprin Pain Report* (Taylor & Curran, 1985). This survey focused on recall of events in the previous year among adults 18 years of age and older and delineated the common sources of pain for Americans. Most of the respondents experienced three to four different types of physical pain every year.

The prevalence of pain for the hospitalized individual is high for moderate to severe pain. Estimates suggest that 40 to 60% of hospitalized verbal children report moderate to severe pain (Hester, Foster, Kristensen, & Bergstrom, 1989; Johnston, Jeans, Abbott, Grey-Donald, & Edgar, 1988; Mather & Mackie, 1983) and that 58 to 75% of hospitalized adults experience excruciating pain (Cohen, 1980; Donovan, Dillon, & McGuire, 1987; Marks & Sachar, 1973). Among post-operative patients, 74% experience moderate to unbearable pain 24 hours postoperatively, while 65% experience moderate to unbearable pain 72 hours postoperatively (Owen, McMillan, & Rogowski, 1990).

Prevalence estimates for hospitalized preverbal children and the elderly were not identified. Presumably, pain in these two populations would be high: hospitalized preverbal children often undergo multiple procedures for diagnosis and treatment, and elderly often suffer from chronic illnesses for which pain is inher-

ent. Studies on the elderly in nursing homes revealed that 45 to 80% experience pain (Lau-Ting & Phoon, 1988; Roy & Michael, 1986).

Individuals with cancer experience different types of pain: acute, associated with diagnostic tests and therapy; chronic, associated with disease progression and therapy; acute or chronic, associated with but not directly caused by cancer; and chronic, associated with conditions other than cancer (Coyle & Foley, 1987; Foley, 1985). Research findings suggest that prevalence of pain increases with progression of the disease (Foley, 1985) and differs according to the site of cancer (Foley, 1979). Miser, Dothage, Wesley, and colleagues (1987) found 52 to 100% of children and young adults had pain at the time of diagnosis and that the prevalence was related to the type of cancer (Cornaglia, Massimo, Haupt, Melodia, Sizemore, & Benedetti, 1984; Miser et al., 1987).

Bonica (1980) examined data from 54 reports from 15 countries and found that an average of 51% of patients in all stages of cancer and 74% in advanced or terminal stages experience pain. Similarly, Portenoy (1989) concluded from several studies that 50% of patients at all stages of disease and 70% with advanced neoplasms report pain. For patients hospitalized in a cancer center, 78% of the pain problems occurred with direct tumor involvement (Foley, 1979) and for outpatients, 62% occurred with direct tumor involvement (Daut & Cleeland, 1982). Twycross and Fairfield (1982) found that 81% of patients with advanced cancer experienced two or more types of pain. Although the subject has not been well studied, initial findings suggest that breakthrough pain at severe to excruciating levels is a problem for 64% of individuals with cancer (Portenoy & Hagen, 1990). Patients at home report higher levels of pain than those at the hospital (Ferrell & Schneider, 1988).

Pain is unresolved for many individuals. In a repeated measures study, 63% of children, 4 through 13 years, reported pain on each of four assessments over a four to six hour period (Hester et al., 1989). Presumably, these children, primarily post-surgical, had little pain relief. Findings are similar for adults. In fact, 6% of medical-surgical and cancer related patients reported a lack of relief from analgesics (Donovan & Dillon, 1987; Donovan et al., 1987) and 2% of the medical-surgical patients reported an increase in pain following analgesics (Donovan & Dillon, 1987). One estimate suggested that only 35% of hospitalized adult patients experience total pain relief (Donovan et al., 1987).

## Costs of Pain

Pain is costly for individuals and society. It affects the quality of life for individuals (Ferrell, Grant, Padilla, Vermuri, & Rhiner, 1991; Padilla, Ferrell, & Grant, 1990). An adult experiencing pain is unable to engage in routine activities (including work) an average of 23 days per year (Taylor & Curran, 1985). Pain is also related to other factors that affect the individual's quality of life including interruptions in sleep (Donovan et al. 1987; Marks & Sachar, 1973; Miser et al., 1987; Perry, Heidrich, & Ramos, 1981), eating (Ferrell & Schneider, 1988), mobilization (Ferrell & Schneider, 1988), and functional status (Ferrell & Schneider, 1988; Ferrell, Wisdom, & Wenzl, 1989; Miser et al., 1987). Although the majority of Americans report satisfaction with their lives, satisfaction decreases as the severity of pain increases (Taylor & Curran, 1985).

Monetary costs are available only indirectly through determination of lost work days, health care visits, and length of hospital stay. Lost work days approximated five per full time employee at a cost of \$550 million (Taylor & Curran, 1985). More than half of individuals with pain visit a medical doctor; 18%, a chiropractor; and 12%, a pharmacist. Of those who describe their pain as unbearable, 82% consult a physician. About 40% of individuals who contact a physician receive a prescription for pain medication and 20%, a nonprescriptive medication.

Crook and colleagues (1984) reported that for individuals with temporary pain 77% made 3.2 visits per year to their family physician for a pain complaint; 28%, 4.7 visits to other health professionals; 12%, 1.8 visits to the emergency department; and 9% had at least one hospitalization. With more persistent pain (but not necessarily chronic pain), the estimates were higher: 81%, 5.1 visits to family physician; 41%, 4.9 visits to other health professionals; 29%, 1.4 visits to the emergency room; and 22%, at least one hospitalization.

Approximately 70% of Americans (80% women and 63% men) used over-the-counter medications for pain relief (Taylor & Curran, 1985). The most frequently used pain relievers were salicylates or aspirin (63%), acetaminophen (56%), ibuprofen (7%), and combination products (7%). Cost issues have become more important as treatment options for pain management have become more sophisticated, using such approaches as patient controlled analgesia, parenteral medications, and implanted infusion devices. While these high technology approaches may work well with a postoperative patient who needs short term pain control, the cost becomes prohibitive for chronic cancer patients (Ferrell, 1993).

Other cost issues include length of hospitalization needed for pain control as well as unscheduled readmission for pain control. For hospitalized patients, length of stay may be longer for individuals with unresolved pain. Unresolved pain inhibits the postoperative recovery by, for example, limiting the patient's ability to cough, turn, and mobilize early. The relationship between pain and length of stay is a focus in only a few studies. For example, Flemming and Sarafian (1977) found that children who received regional blocks had shorter hospital stays than those who did not have a block. Stevens (1990) showed that the use of flow sheets for pain documentation was associated with shorter lengths of stay for children.

In a study of admissions over a period of a year in a cancer center in the West, 2,977 (52%) of the admissions were identified as unscheduled; 255 (8.6%) of the patients were admitted with uncontrolled pain as the primary diagnosis (Grant & Ferrell, 1992). Significantly more females were identified and the average hospital stay was 12 days. This represents a considerable cost for the hospital and patients, and points to the need to explore other ways to manage pain in discharged patients. Clearly cost issues have been identified and cost research is essential.

### **Ethical Considerations**

The pain experience may be surrounded by ethical concerns for the patient and family. For health professionals, concerns about how to respond to patients with pain and their family caregivers and how to manage their own beliefs about pain and suffering may result in ethical dilemmas. The Panel's view of pain is that it is multidimensional concept, including physiological, sensory, affective, cognitive, behavioral, and sociocultural components. Ethical considerations of pain management specifically interface with several of these dimensions. The affective component includes the concept of suffering and is frequently the aspect of pain that patients fear most. The cognitive component includes what the pain means to the individual and what decisions about pain are made. It thus may have significance for the patient, the nurse or the caregiver. Values and attitudes about pain involve the ethical perspective and influence the way the patient perceives pain as well as the way the nurse or caregiver cares for patients with pain. Little research is available in this area and problem areas for future studies are evident.

Ethical considerations of pain can be viewed within the framework of bioethical principles. Several are pertinent. Copp (1993) identified the ethical principles related to pain as: autonomy, patient advocacy,

beneficence, nonmaleficence, veracity, and justice. The principle of autonomy involves respect for the individual and suggests that people have the right to self-determinism (Gadow, 1989). In protecting patient autonomy, the nurse is responsible for informing patients of their right for relief of pain and suffering. The patient has a right to know the options for pain management and the side effects, complications, and costs associated with various approaches. Sometimes patients give up autonomy leaving the decisions to the health care provider. The nurse, thus becoming the patient advocate, needs to understand the patient's desires for pain management, and carry out interventions that meet the patient's wishes and are congruent with the patient's attitudes and values.

The principle of beneficence asserts that health care providers have a responsibility to benefit the patient. Within this principle, the health care provider is obligated to select the most reasonable, safe, and cost effective way to relieve the patient's pain. Threats to beneficence include improper use of specific medications or pain technology, undermedication, and failure of the professions to provide adequate pain education in schools of medicine or nursing (Whedon & Ferrell, 1991). Watt-Watson's (1987) survey of graduate and baccalaureate students revealed a lack of knowledge about chronic pain and its assessment and an underestimation and inattentiveness to depression in the person experiencing years of disability. Ferrell, McCaffery, and Rhiner (1991) confirmed the continuing deficits in nursing knowledge regarding opioid analgesics and the nurse's fear of addiction.

The principle of nonmaleficence states that nurses should avoid causing harm and strive to protect the patient from harm. When patients have unrelieved pain, they suffer. Nonmaleficence points to the need to relieve suffering, prevent complications such as secondary infections in central venous lines used to administer pain medications, and combine painful procedures with clear explanations and pain relief measures. Copp (1993) wrote of the torture the patient in pain endures and the additional pain of diagnostic procedures, when neither the presenting pain nor the diagnostic pain is addressed. The suffering aspect has been identified and defined by various nurses, such as Graffam (1979) who studied the responses of nurses to patients in pain. Battenfield (1984) dealt with the definition of suffering; Steeves and Kahn (1986; 1987) emphasized the importance of attributing meaning to the suffering experience. Benedict (1989) investigated suffering associated with lung cancer. In interviews with 30 clinic patients, pain was a major source of suffering. The investigation by Ferrell, Wisdom, and Wenzl (1989) demonstrated the relationship between quality of life and pain relief in cancer patients, under-

scoring the need to relieve pain in order that persons with malignant and non-malignant pain could be spared unnecessary suffering.

The ethical principle of veracity emerges as the use of placebo is considered. If informed consent is obtained for clinical trials in which a placebo is used, the concerns decrease. However, the placebo itself involves ethical, legal, and political issues when the patient's integrity is plotted against the medical staff's accuracy (Brody, 1990).

The principle of justice applies to the distribution of scarce resources and points to the need to provide access of patients with pain to appropriate medical support. As health care costs continue to escalate, and pain management techniques become more complex and technical, health care providers need to provide adequate pain relief to all patients. Cost analysis of approaches to pain management clearly illustrate the need to provide pain relief through the least invasive approach that is effective. Thus, the oral route of delivering pain medication needs to be thoroughly explored before high technology approaches involving epidural catheters and complex intravenous administration systems are initiated. If high tech procedures are employed, the patient and family need to understand the cost of such an approach (Whedon & Ferrell, 1991).

Decisions about pain management are understood to involve moral judgments by a multidisciplinary team (Lisson, 1989; Meinhart & McCaffery, 1983). The NIH Consensus Conference (1986) emphasized the need for both a multidisciplinary and multidimensional approach to pain management. The multidisciplinary approach is evident in writings from the humanities, philosophy, psychology, anthropology and law (U.S. Pres. Commission, 1981-83; Lisson, 1989; Spross, 1985; Young-Mason, 1990; Pellegrino & Thomasma, 1981; Cassell, 1982). The interface of ethical and legal perspectives is illustrated in a current issue resulting from modern medical care: the extension of life in some patients for whom quality has deteriorated to intolerant levels. The movement toward legalizing physician-assisted suicide has resulted. A clear responsibility of the healing professionals in such situations is to provide relief from pain and suffering, because unrelieved symptoms may lead patients to obtain relief through suicide (Kliban, 1987).

A survey by Omery and associates (1990) identified pain relief as the most frequent ethical issue encountered by participating nurses. Clearly, ethical issues must be addressed and the challenges to improvement of care accepted by the health team and the pain researcher.

## Contributions of Nurses to the Science of Pain

In the context of the Panel's work, it is important to describe from an historical perspective the important role that nurses have played in the development of the science of pain. Through their scholarly work, including research, nurses have developed and refined techniques to assess and manage pain, analyzed the issues involved in caring for patients with pain in a variety of settings, and described the phenomenon of pain in different patient populations.

Pain experienced by children received little or no attention in the literature until the early 1970s. Subsequently, only 33 of 1,370 pain articles published from January, 1970, to August, 1975, were directed toward pediatric pain (Eland & Anderson, 1977). Thirty-two of the articles were medically oriented; 25 addressed abdominal or headache pain. An exception was Schultz's (1971) exploration of 10- and 11-year olds' perception of pain. Nurse researchers in the 1970s focused primarily on pain in verbal children; Eland and Anderson (1977) and Hester (1979) addressed self-report of pain and Savedra identified pain as part of the burn experience for hospital-ized school-age children (Kueffner, 1975; Savedra, 1976).

The 1980s brought increased interest of nurses and other health professionals in pain in children and adolescents. While attention was no longer exclusively focused on verbal children, the vast majority of research continued to address this population. A book by Ross and Ross (1988) and another by McGrath and Unruh (1987) documented the state of the art and science in pediatric pain research. In 1990, McGrath published an additional book.

Two international symposia (Seattle, 1988, and Montreal, 1991) and one European symposium on Pediatric Pain (The Netherlands, 1989) have occurred. Selected research findings of the Seattle Conference were disseminated in a volume by Tyler and Krane (1990). Fifty-nine abstracts summarizing research presented at the Netherlands symposium appeared in December, 1989 in an issue of the *Journal of Pain and Symptom Management* devoted exclusively to pediatric pain. The Montreal conference produced 203 abstracts in the April, 1991 issue of the *Journal of Pain and Symptom Management* attesting to the ever increasing interest in infant and childhood pain. The 1991 conference reports showed a continued focus on assessment and measurement (30 abstracts) and pharmacological management of pain (31 abstracts) (Berde, 1991). Studies related to patient controlled analgesia, regional analgesia, ethnic and transcultural factors, and family influence that were noticeably absent in the 1989 conference appeared at the 1991 conference.

In 1962, Dorothy Crowley published the first nursing book that addressed pain in adults and its alleviation. Also in the early 1960s, the Division of Nursing of the U.S. Public Health Service funded a seminal study to examine nurses' actions in the relief of pain (Newton, Hunt, McDowell, & Hanken, 1964). A major focus of the research was the development and refinement of an observational rating scale for pain. This work served as a foundation for subsequent studies of behavioral rating tools in postoperative patients (Bruegel, 1971; Chambers & Price, 1967; Mateo & Krenzischek, 1992).

Another focus of Newton's work (1964) was on the behaviors of patients in pain, responses of nurses to patients, their choices of alleviation techniques, and the consequences of nursing actions. Subsequent researchers studied the effects of nursing interactions with patients on pain relief (Diers, Schmidt, McBride, & Davis, 1972; McBride, 1967; Moss & Meyer, 1966). These studies provided evidence for the beneficial effects of nurse-patient interaction on pain management.

In the late 1960s and early 1970s, nursing literature about pain began to appear with increasing frequency. McCaffery (1972) and Benoliel and Crowley (1974) were among the first to write extensively about the concept of pain and nurses' clinical responsibilities. A body of research began to emerge focusing on several different areas. Davitz and Davitz (1980; 1981) and their colleagues explored nurses' inferences of physical pain and psychological distress, their behaviors toward patients with pain, and variables related to these behaviors (Baer, Davitz, & Lieb, 1970; Davitz & Davitz, 1975; Davitz & Pendleton, 1969; Davitz, Sameshima, & Davitz, 1976; Lenburg, Glass, & Davitz, 1970). This body of research enabled nurses and others to better understand the many factors and complex relationships that operate in nurses' inferences of patients' pain and distress, and also helped demonstrate that inferences of degree of suffering appear to be related to selected nursing behaviors.

A broader perspective was taken in research initiated by Strauss, Fagerhaugh, and Glaser (1974). These investigators suggested that assessment and management of pain involved patient-nurse, nurse-nurse, and organizational and work factors. Using a grounded theory methodology, they described pain "work" (management) as consisting of pain expression, diagnosis, prevention, minimization, and endurance. Related research explored these concepts on burn units (Fagerhaugh, 1974) and orthopedic units (Wiener, 1975), revealing that nurse-patient interactions were extremely important in the management of pain, and that many personal, sociocultural, and other variables were part of these interactions.

Copp (1974) pioneered in studies of hospitalized patients' descriptions of their experiences of pain and how they coped with it. This work also had a significant impact on researchers who followed, both in nursing and related disciplines. Jacox and Stewart (1973) studied the relationships among selected psychosocial contingencies and the experience of pain in patients with postoperative, arthritis, and cancer pain. Their research emphasized the importance of the psychosocial component of pain, and the origin of pain as a "major factor in peoples' interpretation of and response to pain" (Jacox & Stewart, 1973, p. 147). All of this early work contributed to a better understanding of the components of pain, the importance of personal interpretations of pain, and the issues involved in its clinical assessment and management.

Nurses also have made significant historical contributions to the pain literature through the publication of books. Subsequent to the first book by Crowley in 1962, in 1977, Jacox published a source book that was influential in guiding the clinical care of and research on patients with pain over the next decade. Davitz and Davitz compiled 15 years of work in two publications on nurses' inferences of patients' pain (1980; 1981). McCaffery's early books were seminal contributions in their thorough treatment of the nursing role in managing pain (McCaffery, 1972; 1979); recent publications further delineate this important role (McCaffery & Beebe, 1989; Meinhart & McCaffery, 1983).

As the 1980s began, nursing research related to pain continued to expand into new areas. In 1980, Kim reviewed the theoretical foundations of pain, related research, and nursing practice, highlighting research conducted by nurses between 1960 and 1980. In 1987, Taylor published a comprehensive review of nearly three decades of nursing research related to pain, describing significantly more nursing studies than had appeared in Kim's (1980) review just seven years earlier.

In the mid to late 1980s, nurses demonstrated their research contributions in major national conferences related to the state of the science in pain. The 1986 National Institutes of Health (NIH) Consensus Conference on the Integrated Approach to Management of Pain was chaired by a nurse, Dr. Laurel Copp. This conference was the first NIH consensus conference in which nurses played a major role in planning, presenting scientific evidence, and evaluation.

In a second major conference, held at the University of North Carolina in Chapel Hill in the spring of 1988, a large body of nursing research on pain was presented and analyzed. The conference resulted in a

monograph (Funk, Tornquist, Champagne, Copp, & Wiese, 1989) that highlighted the clinical implications of research findings on pain as well as fatigue and nausea. Jacox (1991) commented that this conference was "notable in that it brought together three generations of nurses who had studied pain." Nurses have participated actively at the federal level in the formulation of clinical practice guidelines based on extensive and rigorous review of the best scientific evidence (Acute Pain Management Guideline Panel, 1992; Carr & Jacox, 1991; Jacox & Carr, 1991). Ada Jacox cochaired the pain panel with a physician, and exemplifies the leadership role that nurses have taken in collaboration with other health care providers to address the problems of pain management.

Much of the research described above was performed in collaboration with researchers from other disciplines. Thus, it represents not only a history of nurse-initiated pain research, but a long and productive record of interdisciplinary research in continuing development of the science of pain over the past three decades.

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